



US 20050247165A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2005/0247165 A1****Arriens et al.**(43) **Pub. Date: Nov. 10, 2005**(54) **TOOL FOR EXTRACTING DAMAGED FASTENERS AND METHOD OF USING SAME****Publication Classification**(51) **Int. Cl.⁷** **B25B 13/50**(52) **U.S. Cl.** **81/53.2**(75) **Inventors:** **Rene Arriens**, Merritt Island, FL (US);
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Andrew J. Knight, Cocoa, FL (US)(57) **ABSTRACT**

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Canaveral, FL (US)(21) **Appl. No.:** **11/110,690**(22) **Filed:** **Apr. 21, 2005****Related U.S. Application Data**(60) **Provisional application No. 60/563,804**, filed on Apr.
21, 2004.

A tool for extracting damaged fasteners which reduces foreign object debris, and a method of using the same. The tool preferably includes a collet, which can be constricted around the damaged fastener, an outer wheel, a jam wheel, a jam tube, a drill bit, and a drill stop. The tool is preferably configured such that the drill stop prevents overdrilling. The collet is preferably secured around the damaged fastener by turning the jam wheel, and the outer wheel can be turned in an effort to remove the fastener. If the fastener cannot be removed, the drill bit is applied until the fastener can be extracted. The design of the tool is such that foreign object debris created during this process is preferably contained within the tool itself, thus reducing contamination.

